UNIVERSITI TEKNOLOGI MARA

AUTOMATIC GENERATION OF GEOSPATIAL DATASET (MS 1759:2004) DERIVED FROM TOTAL STATION DATA

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CONFIRMATION BY PANEL OF EXAMINERS

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ABSTRACT

A study towards automatic generation of geospatial dataset (MS 1759: 2004) derived from total station data is carried out. In this study, one hundred and thirty one (131) questionnaires were gathered from the licensed land surveyors in Malaysia who are the major contributors in carrying out engineering survey work using total station. The method of processing total station data using the current software in the market generate different data format such as RTF file, ASCII file and drawing file. It is not capable for direct usage in GIS environment. If the datasets were to be used in a GIS environment, further processing which involves expertise and manual editing need to be carried out as to comply with the GIS standard data format (MS 1759:2004). The process incurred time, cost and labour intensive. An automation towards generating GIS data format (MS 1759:2004) from total station data is introduced. The automated system acquires engineering survey datasets from Civil Design and Survey (CDS) software and American Standard Code for Interchange (ASCII) format used by land surveyors and converts it to GIS data format. In the qualitative approached, there is an excellent match between the plotted dataset. As for the quantitative approach, it was found that the system is 80% faster than the current practice. As for the discrepancies check for the horizontal (X,Y) and reduced level value (Z) root mean square error (RMSE) are 0.006 m and 0.010 m respectively. The developed system will be of great advantage towards automated production of MS 1759:2004 dataset.

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CHAPTER TWO
LITERATURE REVIEW

2.1 INTRODUCTION

This chapter discusses the land surveyor's profession in carrying out land survey work briefly in global and focussing in Peninsular Malaysia, which involves total station in data acquisition and software in processing method. Current practices by survey department and land surveyor in conducting engineering survey work is highlighted.

2.2 LAND SURVEYING AND MAPPING MOVE

Land surveying profession probably one of the oldest professions in the world (Oxford, 2016). An explanation about it is touched in this section, deals with the early history, current equipments and software used in a modern land survey and mapping.

2.2.1 Brief History

The first land survey activities have been found in Egypt. The determination of farm boundaries is done along the river using ropes. In addition, the construction of the pyramids of Giza in 2,700 BC has shown that determination of perfect squares and north-south orientation happen (SMW, 2011).

The most important tool in land surveying is compass. This tool has been used for determining the direction or bearing. Until now, despite the determination of the bearing can be made with astronomical observations, compass are still used to determine the assumptions of bearing on the particular job. Magnetic compass are widely used at the beginning of the 14^{th} century by the Italian merchants who sailed the Mediterranean to trade in Europe, North Africa and Levant. In 1518, compass is perfected with a wooden box as shown in Figure 2.1 (Massimo, 2014).